

waters on gray soil of mostly sand.

The A. tomentosa Wall., given as a synonym by Boissier (1879), actually belongs in the synonymy of typical A. marina (Forsk.) Vierh. The Boissier reference is often cited as "1875", but the pages involved were not actually published until 1879. The Rechinger 4927, cited by Whitmore (1966), is actually A. marina var. resinifera (Forst.) Bakh. It is also very probable that the R. T. Baker reference (1915) and illustration refer to A. marina var. resinifera rather than to A. officinalis. Erdtman (1966) describes the pollen of A. marina under the name of "A. officinalis".

Guillaume, Thorne, & Virot (1965) cite Thorne 28269 from New Caledonia, but the species does not occur there. They are doubtless referring to A. marina (Forsk.) Vierh or its variety resinifera (Forst.) Bakh. The K. Wood 31769 and J. S. Edwards 31838, distributed as A. officinalis, are actually A. marina var. resinifera.

AVICENNIA SCHAUERIANA Stapf & Leechman

Additional synonymy: Avicennia schaueriana Stapf & L. ex Klein, Anais XV Congr. Soc. Bot. Bras. 260, sphalm. 1964.

Additional bibliography: Klein, Anais XV Congr. Soc. Bot. Bras. 260. 1964; Moldenke, Phytologia 14: 335—336. 1967.

ADDITIONAL NOTES ON THE GENUS VERBENA. IV

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional & emended synonymy: Obletia Lemonn. ex Rozier, Introd. Obs. Phys. Hist. Nat. 1: 367. 1773. Billardiera Moench, Meth. Pl. 369. 1794 [not Billardiera Sm., 1793, nor Vahl, 1796]. Shuttleworthia Steud., Nom. Bot., ed. 2, 2: 575, sphalm. 1841. Aubletia Jacq. apud Wittstein, Etymolog.-bot. Handwörterb. 85. 1852 [not Aubletia Gaertn., 1788, nor Lour., 1790, nor Neck., 1790, nor Rich., 1807, nor Schreb., 1789]. Obletia Rozier apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 323, in syn. 1894. Glanduria Troncoso, Biol. Abstr. 46: 7724 (1965) and 46 (2): B.53 & B.128, sphalm. 1965. Obletia "Lemonn. ex Rozier" apud Airy-Shaw in Willis, Dict. Flw. Pl., ed. 7, 784, in syn. 1966.

Additional & emended bibliography: Adans., Fam. Pl. 2: 12, 196, & 198. 1763; Retz., Svenska Vet. Akad. Stockh. Mya Handl. 34: 143—146, pl. 5. 1773; H.B.K., Nov. Gen. & Sp. Pl., ed. fo-

lio, 2: 220—224, pl. 133—137 (1817), ed. quart., 2: pl. 133—137 (1817), and ed. quart., 2: 272—277. 1818; Bischoff, Handb. Bot. Term. 1: Erk. Taf. [9], pl. 22, fig. 651. 1830; Moris, Ann. Stor. Nat. 4: 39 & 59—60. 1830; Lem. & Chauv., Traité Cult. Geran. 1—152. 1842; D. Dietr., Syn. Pl. 3: 371. 1843; Benth., Bot. Voy. Sulphur 152—153. 1846; Bischoff, Organ. Syst. Art. Regist. 23. 1849; Lecoq, Ann. Scient. Litt. & Indust. Auverg. 25: 145—147. 1852; N. J. Anderss., Vet. Akad. Handl. Stockh. 1853: 199—200. 1854; Schnitzl., Icon. Fam. Nat. Reg. Veg. 137, fig. 2—22 & 30. 1856; N. J. Anderss., Galap. Veg. 81. 1859; E. S. Rand, Trans. Mass. Hort. Soc. 1859: 42—49. 1860; Prior, Pop. Names Brit. Pl. 206. 1863; Chaté, Des Verv. 1—63. 1865; A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 333 & 335—338. 1878; Hieron., Bol. Acad. Nac. Cienc. Córdoba 3 (4): [Sert. Patag.] 59. 1880; Hieron., Bol. Acad. Nac. Cienc. Córdoba 4: [Sert. Sanjuan.] 66—69 (1881) and 4: 404—409. 1881; Lorentz & Niederlein, Bot. Exped. Rio Negro 263—266, pl. 12. 1881; J. E. Gonzalez, Revist. Cientif. Mex. 1 (11): 13 & 17. 1881; A. Gray, Syn. Fl. N. Am., ed. 2, 2 (1): 333 & 335—338. 1886; H. Fischer, Beitr. Vergl. Morphol. Pollenk. 46. 1890; Bagnall, Fl. Warwicksh. 200—201 & 518. 1891; A. S. Hitchc., Ann. Rep. Mo. Bot. Gard. 4: 117. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 249, 306, 877, & 1032 (1893) and 2: 29. 1894; G. H. Buek, Wild Fls. Am. 1 (1): [11—12], pl. 9. 1894; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 895, 1161, 1178—1180, & 1248. 1895; Robinson & Greenm., Am. Journ. Sci. 150 [ser. 3, 50]: 142—143 & 147. 1895; Osten, Abh. Naturw. Ver. Brem. 14: 264. 1898; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Prain, Bengal Pl., ed. 1, 1: 65 (1903) and 2: 823 & 826. 1903; S. N. F. Sanford, Rhodora 6: 88—90. 1904; C. B. Clarke in J. Schmidt, Bot. Tidsskr. 26: 171. 1904; Schaffner, Ohio Nat. 7 [Contrib. Bot. Lab. Ohio State Univ. 27]: 31—34. 1906; Bornm., Beih. Bot. Centralbl. 22 (2): 117. 1907; Duthie, Fl. Upper Gang. Plain 2: 215 & 217—218. 1911; P. B. Kennedy, Annot. List Wild Fls. Calif. 112. 1917; Holste, Merck's Jahresber. 31—32: 513. 1917—1918; Holste, Zeitschr. Exp. Path. Ther. 19: 483. 1918; Kanda, Bot. Gaz. 69 [Contrib. Hull Bot. Lab. 257]: 54—71, pl. 6—9. 1920; E. D. Merr., Philip. Journ. Sci. 19: 376. 1921; Haines, Bot. Bihar & Orissa 4: 704 & 707—708. 1922; Gamble, Fl. Presid. Madras 6: 1085 & 1106. 1924; Molliard, Feuille Nat. 45: 41—44. 1924; W. J. Bean, Garden 88: 184. 1924; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 1, 628—630 & 848—849 (1924) and pr. 2, 628—630 & 848—849. 1925; Marzell, Naturforsch. 3: 417—421. 1926; A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; McCallan, Flow. Gard. Calend. 18. 1927; Savelli, Nuov. Giorn. Bot. Ital., new ser., 34: 396—402, fig. 1—7. 1927; Grieve & Leyel, Modern Herb., pr. 1, 2: 830—832. 1931; T. H. Everett, Gard. Chron. Amer. 35: 179. 1931; Watt & Breyer-Brandwijk, Medic. & Poison. Pl. S. Afr., ed. 1, 153, 241, & 260. 1932; P'ei, Sinensis 2: [65]. 1932; H. C. Comber, Gard. Chron., ser. 3, 92: 371—373 & 391, fig. 185 & 194. 1932; H. F. Comber, Gard. Chron., ser. 3, 92: 412—413. 1932; Tu, Chinese Bot. Dict., abrdg. ed., 718, 851, & 852. 1933; I. N. Anderson, Nat. Hort. Mag. 12: 72—74. 1933; Anon., Ind. Sem. Ofcr. Canje Jard. Bot. Montev. 8. 1935;

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48 (9): S.18 (1967), and 48 (17): S.182. 1967; Moldenke, Résumé Suppl. 15: 1—8, 11, 15, & 24. 1967; J. F. Williamson, Sunset West. Gard. Book, new ed., 437. 1967; Anon., Rutgers Univ. Dept. Hort. & Forest. Veget.-Flow. Open House F.4. 1967; C. L. Porter, Tax. Flow. Pl., ed. 2, 394 & 395, fig. 347 & 348. 1967; Davidson & Buell, Am. Midl. Nat. 77: 381. 1967; Anon., Assoc. Etud. Tax. Fl. Afr. Trop. Index 1966: 56. 1967; M. S. Mill., Plainfield Courier News 24, September 6. 1967; Dony, Fl. Hertfordsh. 89, map 37a. 1967; Zukowski, Fl. Polska 11: [63]—65. 1967.

The genus Aubletia Neck., previously listed by me as a synonym of Verbena, appears, rather, to belong in the synonymy of Ruellia L. in the Acanthaceae. Neckler, in his Elem. Bot. 1: 356—357 (1790), describes it as follows: "AUBLETIA* Aublétie*. 557. Char. Diagn. Perigynanda utraque, 2-labiata. Capsula, 2-locularis; valvis elasticis. Char. Pec. Fructific. monogamica. Perigynanda propria, 2-plex: utraque, 2-labiata, 1-sepala. Labium superius, perigynandae exterioris, simplex, latius. Inferius, 3-fidum. Perigynanda interior, ringens, staminifera. Labium superius, erectum. Inferius, 3-fidum. Stamina, didynamica. Pistillum, 1. Stylus, simplex. Stigma, integrum. Capsula, 2-locularis, 2-valvis. Valvulae, ungue elatico instructae, plurispermac. Proles in hac specie, caulescentes. Folia simplicia. Quaed. Ruell. Linn. Obs. In ambobus generibus chasmophytum nempe & plasrygophytorum, aubletia, ruellia, soubeyrania, crantzia & senkebergia, limites statuuntur."

The Aubletia of Gaertner is a synonym of Sonneratia in the Sonneratiaceae, that of Loureiro is a synonym of Paliurus Mill. in the Rhamnaceae, that of Richard is a synonym of Monnieria L. in the Rutaceae, and that of Schreber is a synonym of Apeiba Aubl. in the Tiliaceae. The Billardiera of Smith is a valid genus in the Pittosporaceae, while that of Vahl is a synonym of Coussarea Aubl. in the Rubiaceae.

Shinn (1967) reports that he observed the bee, Calliopsis (Verbenapis) andrediformis, males, visiting the flowers of Verbena at Lawrence, Kansas, and at Nacogdoches, Texas, but no females doing this at either locality, and that the bee, C. hondurasica, is an oligolege for Verbena as well as for Lippia and Phyla. He says that the genus Calliopsis as a whole favored legumes as first choice, with Verbenaceae and composites as second choice.

It should be noted here that L., Syst. Nat., ed. 10, 2: 852 (1859) is dated "1860" by B. L. Robinson in Proc. Am. Acad. 38: 196 (1902), and H.B.K., Nov. Gen. & Sp. Pl., ed. quart., 2: 274 (1818) is dated "1817" by him. The reference dates of H.B.K.'s works cited in the bibliography above by me have been authenticated by Barnhart (1902).

There is considerable confusion concerning the dates of publication of the N. J. Andersson papers cited in the bibliography of this genus and elsewhere. According to Robinson (1902) the one in Vet. Akad. Handl. Stockh. 1853: 199--200 was issued in 1854, while

the separately paged publication with the same title, Om Galap. Veg., was dated "1857" but cites another publication issued in 1859 and therefore could not have been issued before 1859 itself!

According to the U. S. Dept. Agr. Bot. Subj. Index 15: 14360 (1958) the "Schnack, Inst. Fitotec. Santa Catalina 4: 17--22. 1942" reference was not actually published until 1944. The Boissier (1879) reference is sometimes cited as "1875", but only pages 1--280 were issued in that year; pages 281--1276 did not appear in print until the year 1879.

Teague (1965) lists "a spontaneous hybrid", unnamed, as his no. T.169 from Paraguay. Karrer (1958) and Pelt (1966) report that the chemical substance, "verbenalin", is found in species of Cor-nus as well as in Verbena.

Additions to the list of species or names excluded from the genus are

Verbena americana media annua, ocymi folio lanuginoso, flore pur-pureo ampio Breyne = Bouchea prismatica (L.) Kuntze

Verbena fluminensis (Vell.) Moldenke = Bouchea fluminensis (Vell.)

Moldenke

Verbena lappulaceae Grieve & Leyel = Priva lappulacea (L.) Pers.

Verbena scutellariae, s. cassidae folio, dispermous, americana, an-
Verbena indica Bontii. Hist. Ind. Or. forte etiam Verbena
curassavica scutellariae foliis, flore purpurascente Pluk. -
Bouchea prismatica (L.) Kuntze

Verbena tricolor Raymond = Viola tricolor L., Violaceae

Verbena xeriphicoides Gill. & Hook. = Junellia seriphicoides (Gill. & Hook.) Moldenke

Airy-Shaw (1966) suggests that xVeronicena Moldenke may belong in the synonymy of Verbena although it was actually proposed as an intergeneric interfamilial hybrid. He also places Burseria Loefl. in the synonymy of Verbena, while actually it belongs to that of Priva Adans. He notes a Verbena Rumph. as a synonym of Aerva Forsk. in the Amaranthaceae. Spencer (1940) claims that the generic name, Verbena, comes originally from the Latin word "verber", meaning "a rod, stick, or stem". The Polish common name for the genus, according to Zukowski (1967), is "werbena".

Munz (1962) tells us that "Most of our California verbenas are introduced weeds." It is of interest to note that non-taxonomic botanists are repeatedly referring to a genus Canadea, as, for instance, most recently, Davis (1966). This name seems to have started with Patermann in 1935 and then copied by succeeding cytologists.

Karrer (1958) speaks of a "verbena oil" which contains also what he calls "isovaleriansure", "2-methyl-hepten-(2)-on-(6)", "a-terpineol", and "citrat". He speaks also of a "verbenalol", $C_{11}H_{14}O_5$, and "verbenalin", $C_{17}H_{24}O_{10}$, and reports that geraniol, $C_{10}H_{18}O$, nerol, $C_{10}H_{18}O$, and nerolidol, $C_{15}H_{26}O$, have been isolated from verbena oil. This oil, however, is derived from Aloysia

triphylla (L'Hér.) Britton, known as the "verbena oil-plant" to some botanists.

Perhaps it should also be noted here that the name, "shrubby verbena", is often applied to members of the genus Lantana, while the "sand-verbenas" of our western states are members of the nyctaginaceous genus Abronia.

Martin & Bradley (1961) describe the seeds of Verbena as "compressed-oblong and slightly rounded-triangular in cross section, making it somewhat 2-sided, the rounded back bearing lengthwise ridges toward [the] lower end and a network of cross ridges below; inner face of 2 planes meeting in a long ridge, the surface generally covered with whitish papillae; margin bordered by a narrow flange; attachment scar whitish (in V. ciliata the scar is surrounded by a cuplike extension); 1.5—3 mm. long; endosperm lacking."

Tarr (1955) reports a species of the genus (probably V. officinalis L. or V. supina L.) is often infested by the fungus, Leveillula taurica.

VERBENA ABRAMSI Moldenke

Additional bibliography: Moldenke, Phytologia 13: 244. 1966; Moldenke, Biol. Abstr. 47: 8471. 1966; Hocking, Excerpt. Bot. A. 11: 102. 1967.

Additional citations: CALIFORNIA: Lake Co.: R. F. Hoover 3812, in part (Du-329221).

xVERBENA ADULTERINA Hausskn.

Additional & emended synonymy: Vitex adulterina Hausskn. ex A. W. Hill, Ind. Kew. Suppl. 6: 219, sphalm. 1926. xVitex adulterina Hausskn. ex Moldenke, Résumé Suppl. 15: 24, sphalm. 1967.

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; Moldenke, Phytologia 13: 181. 1966; Moldenke, Résumé Suppl. 15: 24. 1967.

VERBENA ALATA Sweet

Additional bibliography: Moldenke, Phytologia 14: 277. 1967.

Additional citations: BRAZIL: Rio Grande do Sul: Rambo 44819 (B), 45639 (B), 54735 (B); Sehnem 7946 (B).

VERBENA AMEROSIFOLIA Rydb.

Additional synonymy: Verbena ambrosiaefolia Rydb. ex Moldenke, Résumé Suppl. 15: 24, in syn. 1967.

Additional bibliography: Moldenke, Phytologia 14: 277. 1967; Moldenke, Résumé Suppl. 15: 2 & 24. 1967.

My son, Andrew R. Moldenke, informs me that his no. 1874, cited below, had uniformly red corollas and is typical of hundreds of plants over many miles of roadside. He says that this taxon is very distinct in the field from the one with the blue corollas represented by his numbers 1848, 1872, and 1875, herein cited as f. eglandulosa Perry.

The Kraus s.n. [June 22, 1926], distributed as V. ambrosifolia, is actually V. wrightii A. Gray, while Breedlove 1492 is something non-verbenaaceous.

Additional citations: COLORADO: Pueblo Co.: A. Brown 19 (Ms—30750); Grether, Gilbert, & Gale s.n. [17 June 1951] (Ws). Weld Co.: Osterhoit s.n. [July 8, 1909; Herb. Field Mus. 36824] (Ws). NEW MEXICO: Dona Ana Co.: Wooton 642 (Ms—30836). Lincoln Co.: Wooton 363 (Ms—30757, Ms—30759). Santa Fe Co.: H. R. Bennett 8239 (S). ARIZONA: Santa Cruz Co.: A. R. Moldenke 1874 (Rf). MEXICO: Chihuahua: H. S. Gentry 7998 (Du—335265). Coahuila: Edw. Palmer 1050 (Ms—30831). Sonora: H. S. Gentry 7971 (Du—335277).

VERBENA AMBROSIFOLIA f. EGLANDULOSA Perry

Additional bibliography: Moldenke, Phytologia 13: 244. 1966; Moldenke, Résumé Suppl. 15: 2. 1967.

My son, Andrew R. Moldenke, informs me that the corollas on his numbers 1848, 1872, and 1875, cited below, were uniformly blue and that the taxon which these collections represent is very distinct in the field from that represented by his no. 1874, herein cited as typical V. ambrosifolia Rydb. On Moldenke & Moldenke 2095 the corollas were "lavender".

Additional citations: ARIZONA: Cochise Co.: A. R. Moldenke 1848 (Ac). Pima Co.: Kearney & Peebles 10548 (Du—350446). Santa Cruz Co.: A. R. Moldenke 1872 (Ac), 1875 (Rf). MEXICO: Chihuahua: Moldenke & Moldenke 2095 (Rf).

VERBENA ARAUCANA R. A. Phil.

Additional bibliography: H. F. Comber, Gard. Chron., ser. 3, 92: 413. 1932; Moldenke, Phytologia 13: 182. 1966.

VERBENA ARISTIGERA S. Moore

Additional bibliography: Moldenke, Phytologia 13: 182. 1966. Teague found this species in flower in September.

Additional citations: PARAGUAY: Teague 289 (Ws). ARGENTINA: Formosa: Morel 1127 (Ms—34252).

VERBENA BALANSAE Briq.

Additional bibliography: Moldenke, Phytologia 13: 183. 1966.

Woolston describes this plant as an herb, 30—35 cm. tall, with decumbent or prostrate stems, and pale-blue flowers, the tube dark violet-blue, growing in "loma in tierra colorada".

Additional citations: PARAGUAY: Jørgensen 4582 (Du—203336); Woolston 722 (S).

VERBENA BANGIANA Moldenke

Additional bibliography: Moldenke, Lilloa 12: 155. 1946; Moldenke, Phytologia 10: 93. 1964.

The type collection was originally identified and distributed

to herbaria as V. bonariensis L., and was later cited by me (1946) as V. litoralis H.B.K.

Additional citations: BOLIVIA: La Paz: H. H. Rusby 911 (Ws--isotype).

VERBENA BERTERII (Meisn.) Schau.

Emended synonymy: Verbena erinoides L. ex Lorentz & Niederlein, Bot. Exped. Rio Negro 266, sphalm. 1881.

Additional bibliography: Hieron., Bol. Acad. Nac. Cienc. Córdoba 4: 407. 1881; Lorentz & Niederlein, Bot. Exped. Rio Negro 266. 1881; Moldenke, Phytologia 14: 277 & 287. 1967.

Additional citations: CHILE: Aconcagua: Zöllner 1488 (Rf). Antofagasta: Zöllner 1239 (Rf). Valparaiso: Zöllner 1240 (Ac).

VERBENA BIPINNATIFIDA Nutt.

Additional synonymy: Verbena bipinnatifida Nutt. ex Moldenke, Résumé Suppl. 15: 24, in syn. 1967. Verbena bipinnatifida Nutt., in herb.

Additional bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 337 (1878) and ed. 2, 2 (1): 337. 1886; E. S. & F. E. Clements, Natl. Geogr. Mag. 76: 240-241. 1939; L. H. Bailey, Man. Cult. Pl., ed. 2, 839, 840, & 1113, fig. 175a. 1949; Maheshwari, Fl. Delhi 278-279. 1963; Vyas, Journ. Indian Bot. Soc. 44: 161. 1965; Moldenke, Phytologia 14: 277. 1967; Shinn, Univ. Kans. Sci. Bull. 46: 881. 1967; Moldenke, Résumé Suppl. 15: 2, 3, & 24. 1967.

Additional illustrations: E. S. & F. E. Clements, Nat. Geogr. Mag. 76: 241 [in color]. 1939; L. H. Bailey, Man. Cult. Pl., ed. 2, fig. 175a. 1949.

Shinn (1967) records the bee, Calliopsis (Verbenapis) verbenae, as an oligolege on this species in New Mexico

Cory describes the plant as having its stem branched at the base, the branches spreading. Recent collectors have found it growing in alluvium, in Viola limestone, and in xeric pastures without crops. The Andrew Moldenkes describe the plant as a "common roadside weed", "common in alpine roadside clearings", and a "common groundcover on peak" in Cochise County, Arizona. Srinivasan & Agarwal (1963) tell us that the species is often cultivated in India, but without seeing the actual specimens, I doubt this very much.

The H. R. Bennett 8239, distributed as V. bipinnatifida, is actually V. ambrosifolia Rydb.; Kearney & Peebles 10548 is V. ambrosifolia f. eglandulosa Perry; McCart 3964 is V. ciliata var. longidentata Perry; I. L. Wiggins 13393 is V. ciliata var. pubera (Greene) Perry; Thornber s.n. [May 28, 1905] is V. gooddingii Briq.; and Porter & Porter 8978 is V. wrightii A. Gray.

The "Verbena bipinnatifida" recorded by various Indian authors, including Maheshwari (1963), is most certainly not this species. It is most probably V. tenuisecta Briq., which see.

My son, Andrew Ralph Moldenke, informs me that he and his wife observed a white-flowered form of this species (V. bipinnatifida)

growing among the normal form (represented by Moldenke & Moldenke 2052), but did not collect any material. This white-flowered form was observed by him along with the normal form in Rustler Park, Chiricahua Mountains National Forest, Cochise County, Arizona, on July 23, 1967. He says that it was apparently an annual, while the normal plant was a perennial. He gathered seeds of both forms and plans to grow them at Stanford University.

Additional citations: SOUTH DAKOTA: Haakon Co.: Mrs. H. R. English s.n. [August 18, 1927] (Ws). OKLAHOMA: Comanche Co.: Hopkins, Nelson, & Nelson 801 (Du--320915). Murray Co.: Demaree 12296 (Du--372078); Hopkins, Nelson, & Nelson 709 (Du--320947). TEXAS: Bee Co.: M. C. Johnston 541 (Ms--44073). Dallas Co.: Lundell & Lundell 11315 (Du--351437); J. Reverchon s.n. [Curtiss 1962*] (Ms--30755). Reagan Co.: Cory 53507 (Du--362510). Travis Co.: Nickerson s.n. [March 16, 1950] (Ms--34255); Mrs. Smith s.n. [Austin, 5/2/35] (Du--362691). Val Verde Co.: DeWolf 791 (Ms--34280). ARIZONA: Cochise Co.: Moldenke & Moldenke 2026 (Rf), 2051 (Ac), 2052 (Rf). Coconino Co.: D. T. MacDougal 317 (Ms--30830). Pima Co.: Pringle s.n. [April 13, 1881] (Ms--30758). Santa Cruz Co.: L. Benson 8821 (Du--329614). MEXICO: Nuevo León: R. Garcia 69 (Du--511958).

VERBENA BONARIENSIS L.

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 223 (1817) and ed. quart., 2: 276. 1818; Hieron., Bol. Acad. Nac. Cienc. Córdoba 4: [Sert. Sanjuan.] 68. 1881; A. S. Hitchc., Ann. Rep. Mo. Bot. Gard. 4: 117. 1893; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Gamble, Fl. Presid. Madras 6: 1106. 1924; Anon., Ind. Sem. Ofr. Canje Jard. Bot. Montreal 8. 1935; Rendle, Notes Fl. Bermuda 16. 1937; Selling, Bishop Mus. Spec. Publ. 38: 274 & 410. 1947; L. H. Bailey, Man. Cult. Pl., ed. 2, 840 & 1113. 1949; H. L. Mason, Fl. Marshes Calif. 676. 1957; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14360. 1958; Watt & Breyer-Brandwijk, Med. & Poison Pl. S. Afr., ed. 2, 1054 & 1153. 1962; H. F. MacMillan, Trop. Plant. & Gard., ed. 5, 192. 1962; Liogier, Bull. Torrey Bot. Club 92: 301. 1965; Ohwi, Fl. Jap. 763. 1965; Teague, Anal. Mus. Hict. Montevid., ser. 2, 7 (4): 45. 1965; C. A. Sm., Common Names S. Afr. Pl. 129 & 601. 1966; R. H. Compton, S. Afr. Bot. Suppl. 6: 157. 1966; Reese & Thieret, Castanea 31: 274. 1966; Moldenke, Résumé Suppl. 15: 1, 2, 11, & 15. 1967; Moldenke, Phytologia 14: 278. 1967.

The flowers are described as "blue" on Venturi 2814, and as "purple" on M. S. Clements, while on Ewan 19175 they are said to have had the "petal lobes rich-violet" and the throat "magenta when fresh". Reese & Thieret (1966) record the species from the Five Islands of Louisiana. Smith (1966) records the vernacular name, "blouwaterbossie", from South Africa, and comments that it has been known at the Cape of Good Hope since Thunberg's time, was certainly introduced long before that, and is now widespread there except in the arid areas.

It should be noted here that the H.B.K. reference dates given above have been authenticated by Barnhart (1902).

Teague (1965) refers to this species as a "very common ruderal weed", known as "caá mará ruguay", and cites his no. T.197 with "grayish-blue" corollas, from Paraguay. Ohwi (1965) says that it is "Sometimes cultivated and naturalized in the western part of Honshu and Kyushu", Japan. Compton (1966) records it from Swaziland.

Material has been misidentified and distributed in herbaria under the name V. patagonica Speg. On the other hand, the J. Reverchon s.n. [Curtiss 1963**], distributed as V. bonariensis, is actually V. pumila Rydb. in some [not all] herbaria, being a mixture. The T. J. Jenkins s.n. [Herb. Transvaal Mus. 10275], cited previously by me as being deposited in my personal herbarium, is now in that of the Texas Research Foundation at Renner, Texas.

Additional citations: SOUTH CAROLINA: Charleston Co.: Curtiss 1963**, in part (Ms—30761). GEORGIA: Ware Co.: Kuns 208 (Ws). LOUISIANA: Ouachita Par.: Ewan 19175 (Rf). Washington Par.: Demaree 50721 (Ac). CALIFORNIA: Marin Co.: J. T. Howell 19323 (Du—311529). BRAZIL: Rio Grande do Sul: Rambo, Herb. Anchieti 44251 (B), 49696 (B), 57305 (B). URUGUAY: Herter 268 [Herb. Herter 81709] (Ws). ARGENTINA: Buenos Aires: Venturi 54 [Herb. Inst. Miguel Lillo 31447] (Du—317597). Formosa: Morel 372 (Ms—34259). Tucumán: Venturi 2814 (Du—372502). PORTUGUESE EAST AFRICA: Lourenzo Marques: Torre 2239 (Z). MELANESIA: NEW GUINEA: North-eastern New Guinea: M. S. Clemens 41317 (Mi). CULTIVATED: Germany: Wagenitz s.n. [Mus. Bot. Berol. Gartenherb. W.381] (Rf).

VERBENA BONARIENSIS var. CONGLOMERATA Briq.

Additional bibliography: Moldenke, Phytologia 13: 185. 1966.

The Rambo, Herb. Anchieti 44251 & 49696, distributed as this variety, are actually typical V. bonariensis L.

Additional citations: MASSACHUSETTS: Hampshire Co.: C. B. Grover s.n. [June 28, 1951] (Ms—34258).

VERBENA BRACTEATA Lag. & Rodr.

Additional synonymy: Verbena bracteosa Lag. & Rodr. ex Moldenke, Résumé Suppl. 15: 24, in syn. 1967. Verbena bracteata Lag. & Rodr. ex Moldenke, Résumé Suppl. 15: 24, in syn. 1967.

Additional & emended bibliography: A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 336. 1878; J. Macoun, Cat. Can. Pl. 1: 379. 1884; A. Gray, Syn. Fl. N. Am., ed. 2, 2 (1): 336. 1886; H. Fischer, Beitr. Vergl. Morphol. Pollenk. 46—47. 1890; P. B. Kennedy, Annot. List Wild Fls. Calif. 112. 1917; A. H. Holmgren, Handb. Vasc. Pl. Northeast. Nev. 152. 1942; A. H. Holmgren, Handb. Vasc. Pl. North. Wasatch 145. 1948; Russell, Ledingham, & Coupland in Fraser & Russell, Annot. List Pl. Saskat. 36. 1953; H. L. Mason, Fl. Marshes Calif. 677. 1957; Martin & Bradley, Seed Ident. Man. 37, fig. 234. 1961; Sharp & Baker, Castanea 29: 183. 1964; Mohlenbrock & Voigt, Trans. Ill. Acad. Sci. 58 (4): 295. 1965; Holmgren & Reveal, U. S.

Forest Serv. Res. Paper INT.32: [Checklist Vasc. Pl. Intermont. Reg.] 91. 1966; Mohlenbrock, Windler, & O'dell, Castanea 31: 300. 1966; Hartley, Univ. Iowa Stud. Nat. Hist. 21: 114. 1966; Boivin, Naturaliste Can. 93: 429. 1966; Wunderlin, Trans. Ill. Acad. Sci. 59 (2): 143. 1966; Gaiser & Moore, Surv. Vasc. Pl. Lambton Co. 100. 1966; Cody, Ind. Sem. 1967: 18. 1967; Shinn, Univ. Kans. Sci. Bull. 46: 790, 886, & 928. 1967; Moldenke, Phytologia 14: 278. 1967; Moldenke, Résumé Suppl. 15: 2 & 24. 1967.

Additional illustrations: Martin & Bradloy, Seed Ident. Man. fig. 234. 1961.

Sharp & Baker (1964) comment that this species seems in Tennessee to be limited to the western tier of counties. Mohlenbrock, Windler, & O'Dell (1966) cite Windler & O'Dell 478 in the herbarium of Southern Illinois University. Shinn (1967) records the bee, Calliopsis andreniformis, visiting the flowers of this species, but only the females.

Recent collectors have found Verbena bracteata growing on the margins of reservoirs, on soil flooded when the reservoir is full, with Xanthium, Distichlis, etc.; with Cressa, Sida, and Frankenia on dry mud flats; below the highwater line of a river; in loose black soil; in dry sandy soil; in fine sandy loam of the Woodbine group, Lewisville formation; on moist barren soil in pinyon-juniper-yellow pine association; in open sagebrush country; on graded roadsides in pine forests; on dry gravelly streambanks; in open grassland on foothills; in dry open ground; forming a large spreading clump from a single caudex on a sand bar along a river; along the edge of a run-off; on wasteland roadsides; and associated with Lactuca, Evax, Buchloë, and Salsola in level grassland. The Jespersens describe it as a "sprawling hispid herb to 18 inches high, with small flowers". Raven describes it as forming prostrate mats. Kennedy (1917) records it as growing in alkaline soil. Holmgren & Reveal (1966) record the common name "bigbracht verbena".

Bennett describes it as having a thick perennial root with many stems, semi-decumbent at the base, in rosettes, ascending-erect except at the base, in dry ground. Of his August 2 collection he says "Evidently a hybrid with V. stricta Vent. or some other species", but I see no evidence of such hybridity exhibited by his specimen. The flowers were "bluish-purple" on Jespersen & Jespersen 2708, but "pink with white center" on Alexander & Kellogg 1739; "blue" on S. S. White 1346 and "purplish-lavender" on I. L. Wiggins 14976. White refers to the plant as a "creeping herb in pastures", Demaree found it growing on dry level ridges, and Wiggins encountered it along watercourses where water seeps in the spring. Hartley (1966) states that it is found along roadsides, railroads and weedy yards, "scattered throughout the Driftless Area, frequent." Mohlenbrock & Voigt (1965) cite Voigt 1870 from Illinois.

Suksdorf s.n. [July 22, 1881] is a mixture with a species of Populus (fruit). Material of V. bracteata has been misidentified

and distributed in herbaria under the name V. canescens Kunth.

Additional citations: NEW YORK: Queens Co.: A. Brown s.n. [Hunter's Point, Aug. 2, 1879] (Ms—78113). PENNSYLVANIA: Lancaster Co.: A. A. Heller s.n. [August 29, 1900] (Ms—30766). GEORGIA: Floyd Co.: Ravenel s.n. [Rome, 1868] (Ms—30777). ILLINOIS: Champaign Co.: H. S. Reynolds s.n. [May 29] (Ms—30773). Henderson Co.: H. N. Patterson s.n. [Oquawka, September 1874] (Ms—30765). La Salle Co.: Boltwood s.n. [Ottawa, 1881] (Ms—34266). INDIANA: Lake Co.: E. Robinson s.n. [Gary, Sept. 11, 1935] (Du—358079). KENTUCKY: Fayette Co.: R. Peter s.n. [Sept. 1835] (Ms—30769). MICHIGAN: Cheboygan Co.: Ehlers 3284 (Du—361097). SOUTH DAKOTA: Butte Co.: F. L. Bennett 618 (Du—347240). Jones Co.: I. L. Wiggins 14976 (Mi). MISSOURI: Jackson Co.: A. Brown s.n. [Kansas City, July 17, '78] (Ms—30770). Saint Louis: Mühlenbeck 2660 (Ac), 2707 (Rf). ARKANSAS: Hop Spring Co.: Demaree 19335 (Ms—50393). Prairie Co.: Demaree 37763 (Rf). Saint Francis Co.: Demaree 11415 (Du—361595). MONTANA: Rosebud Co.: H. R. Bennett s.n. [7-25-57] (Du—420704), s.n. [August 2, 1957] (Du—420763). Sweetgrass Co.: Hitchcock & Muhlick 13305 (Du—316183). IDAHO: Idaho Co.: Q. Jones 366 (Du—353526). WYOMING: Platte Co.: C. L. Porter 3987 (Du—328891). UTAH: Salt Lake Co.: R. K. Vickery 2374 (Du—449408). NEVADA: Clark Co.: Alexander & Kellogg 1739 (Du—307475). Nye Co.: Raven 19680 (Du—504362). COLORADO: Boulder Co.: Ewan, Pl. Exsicc. Gray. 1090 (Ms—83654). OKLAHOMA: Oklahoma Co.: S. S. White 1346 (Mi). TEXAS: Denton Co.: McCart 8976 (Du—511973). Lubbock Co.: Demaree 7562 (Ws). Moore Co.: Jespersen & Jespersen 2708 (Du—335915). NEW MEXICO: Dona Ana Co.: Wooton 409 (Ms—30767). Grant Co.: O. B. Metcalfe 137 (Ms—30764). ARIZONA: Apache Co.: Demaree 38466a (Ac), 42667 (Rf). Coconino Co.: L. D. Benson 9649 (Du—326796); A. A. Heller 15783 (Du—312034); MacDougal 286 (Ms—30768). Gila Co.: F. W. Gould 3918 (Du—348141). Graham Co.: Thornber s.n. [Thatcher, 8/24/05] (Du—327062). Mohave Co.: Parker, McClintock, & Robbins 6278 (Du—348125). Yavapai Co.: H. H. Rusby s.n. [June 1883] (Ms—30774). WASHINGTON: Grant Co.: H. W. Smith 724 (Du—318727). Klickitat Co.: Suksdorf s.n. [July 22, 1881] (Ms—30813). CALIFORNIA: Lassen Co.: Wiggins & Wiggins 16338 (Du—450455). Merced Co.: Nobs & Smith 165 (Du—415617). County undetermined: Edw. Palmer 341E (Ms—30763), 342E (Ms—30771). MEXICO: Coahuila: Edw. Palmer 1048 (Ms—30772).

VERBENA BRASILIENSIS Vell.

Additional bibliography: Shinners, Sida 2: 393 & 448. 1966; H. L. Hoffman, Castanea 31: 309. 1966; Moldenke, Phytologia 14: 279 & 288. 1967; Moldenke, Résumé Suppl. 15: 2, 5, & 24. 1967.

Carter found this species growing in a ditch with Lotus ameri-

camus, Rumex crispus, Melilotus alba, Helianthus annuus, and Cuscuta sp. Demaree encountered it in Arkansas on low ridges of chalk and reports it "common" on marl and gypsum ridges. Material has been misidentified in gardens and distributed in herbaria as V. simplex Lehm.

Additional citations: ALABAMA: Baldwin Co.: Iltis & al. 25207 (Ws). ARKANSAS: Little River Co.: Demaree 54085 (Ac). Sevier Co.: Demaree 54000 (Rf), 54290 (Ac). LOUISIANA: Ouachita Par.: E. D. Barkley 37420 (Rf). Plaquemines Par.: Demaree 50745 (Ac). Saint Tammany Par.: Demaree 30759 (Rf). Washington Par.: Demaree 50723 (Rf). TEXAS: Hardin Co.: Tharp 50-108 (Ms--34271). CALIFORNIA: Fresno Co.: E. Carter 91 (Du--343877). BOLIVIA: Cochabamba: R. F. Steinbach 699 (S). PARAGUAY: Morong 128 (Ws). ARGENTINA: San Juan: Cuezzo 2210 (Ms--34272). Tucumán: O'Donell 95 [Herb. Inst. Miguel Lillo 36218] (Du--317604). CULTIVATED: Germany: Wagenitz s.n. [Mus. Bot. Berol. Gartenherb. W.380] (Rf).

VERBENA BRASILIENSIS var. SUBGLABRATA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 414-415. 1962; Moldenke, Résumé Suppl. 15: 5. 1967.

Additional citations: CHILE: Santiago: Gersh 70 (Ws).

VERBENA CABRERAE Moldenke

Additional bibliography: Moldenke, Phytologia 13: 186. 1966.

Steinbach describes this plant as abundant along roadsides in partly sandy and wet soil, at 550 meters altitude, flowering in June, with the flowers "violeta fuerta, caliz verde con jaspe purpurino".

Additional citations: BOLIVIA: Santa Cruz: R. F. Steinbach 321 (S). ARGENTINA: Santiago del Estero: Huidobro 3079 (Du--330707).

VERBENA CALIFORNICA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 416-417. 1962.

Additional citations: CALIFORNIA: Tuolumne Co.: R. F. Hoover 3613 (N), 4130 (Du--501703).

VERBENA CALLIANTHA Briq.

Additional bibliography: Moldenke, Phytologia 13: 186. 1966.

Woolston describes this plant as a procumbent herb, 30-80 cm. long, with the corollas "deep rose-pink, the tube mauve-pink", growing on low campos.

Additional citations: PARAGUAY: Woolston 623 (S).

VERBENA CAMERONENSIS L. I. Davis

Additional bibliography: Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14360. 1958; Moldenke, Phytologia 14: 279. 1967.

The United States Department of Agriculture library, in the reference cited above (1958), dates the original publication of this binomial as August 15, 1941.

VERBENA CANADENSIS (L.) Britton

Additional synonymy: Verbena ambletia Lapham ex Moldenke, Résumé Suppl. 15: 24, in syn. 1967.

Additional & emended bibliography: Retz., Svenska Vet. Akad. Stockh. Nya Handl. 34: 143—146, pl. 5. 1773; Benth., Bot. Voy. Sulphur 153. 1846; Schnitzl., Icon. Fam. Nat. Reg. Veg. 137, fig. 3. 1856; A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 337 (1876) and ed. 2, 2 (1): 337. 1886; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 1, 628, 630, & 848 (1924), pr. 2, 628, 630, & 848. 1925; T. H. Everett, Gard. Chron. Amer. 35: 179. 1931; I. N. Anderson, Nat. Hort. Mag. 12: 72—74. 1933; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 3, 628, 630, & 848. 1938; V. Quinn, Stories & Legends Gard. Fls. 219. 1939; L. H. Bailey, Man. Cult. Pl., ed. 1, pr. 4, 628, 630, & 848 (1944) and ed. 2, 840 & 1113. 1949; Hylander, MacM. Wild Flow. Book 337. 1954; R. M. Carleton, Ind. Common Names Herb. Pl. 100. 1959; Mohlenbrock & Voigt, Trans. Ill. Acad. Sci. 58 (4): 295. 1965; J. E. Moore, Castanea 30: 26. 1965; Moldenke, Phytologia 14: 279. 1967; Moldenke, Résumé Suppl. 15: 2 & 24. 1967; Zukowski, Fl. Polska 11: 65. 1967.

Additional illustrations: Schnitzl., Icon. Fam. Nat. Reg. Veg. 137, fig. 3 [in color]. 1856; T. H. Everett, Gard. Chron. Amer. 35: 179. 1931; I. N. Anderson, Nat. Hort. Mag. 12: 74. 1933.

Cory speaks of this plant as frequent in higher places among open woods in Jasper County, Texas, with the stems branched at the base, or with some branches elongate and prostrate, rooting at the nodes, while other branches are ascending, up to 4.5 dm. long. The common name "clump verbena" is applied to this species by Bailey (1924). Collectors have found the plant growing in rocky wooded cedar glades, in grazed open dry limestone glades on the top of high hills, and in "grass-forb prairie community". Iltis found it on dry steep partly wooded cedar glades on shallow limestone with Amsonia ciliata var. filifolia, Eriogonum longifolium, Lithospermum canescens, Aquilegia canadensis, Baptisia minor, Astragalus distortus, Taenidia integrifolia, Sabina virginiana, Gaultheria pilosum, G. virgatum, and Valerianella sp.

Quinn (1939) reports that Verbena canadensis is called "pleasant dream drink" by the Pawnees, but the Omahas call it "stomach-ache medicine". Zukowski records the species as both cultivated and escaped in Poland, citing Schalow 1931.

The Demaree s.n. [April 22, 1928] collection, cited below, is remarkable for its very white-hirsute stem. Mohlenbrock & Voigt (1965) cite a Voigt s.n. from Illinois.

It should be pointed out here that the very polymorphic V. canadensis of the United States is replaced in Mexico by V. elegans H.B.K. and its var. asperata Perry. The latter, because of its longer spikes, is sometimes difficult to distinguish from V. canadensis. However, in V. canadensis the plants are normally only somewhat and irregularly hirsute, the spike elongate conspicuously in age, the bractlets are slightly shorter than or equal to the calyx, the calyx is 10—13 mm. long, with weak and irregular pubes-

cence, and the calyx-teeth are 2--3 mm. long. In V. elegans var. asperata, on the other hand, the plants are always densely hispid-hirsute, the spikes remain compact at maturity, the bractlets are only 1/2 to 2/3 as long as the calyx, the calyx is only 8--10 mm. long, with uniform and stiff pubescence, and the calyx-teeth are rarely over 2 mm. long.

The Edw. Palmer 1051, distributed as V. canadensis, is actually V. delticola Small, while Nickerson s.n. [April 10, 1950] is V. ternisepta Briq.

Additional citations: GEORGIA: Richmond Co.: T. J. Wray s.n. (Ws). ALABAMA: Tuscaloosa Co.: R. V. Moran 1353 (Du--309599). KANSAS: Douglas Co.: A. R. Moldenke 1429 (Ac). ARKANSAS: Benton Co.: Demaree s.n. [April 22, 1928] (Ws). Faulkner Co.: Demaree 5962 (Ws). Fulton Co.: Iltis & al. 21729 (Ws). Nevada Co.: Moore & Iltis 53206 (Ws). Washington Co.: Isely 2565 (Du--340098). White Co.: Iltis & al. 21668 (Ws), 21692 (Ws); H. S. Reynolds s.n. [Judsonia, May 22, '77] (Ms--30776). LOUISIANA: Parish undetermined: Lapham s.n. (Ws); Short s.n. [Louisiana] (Ms--30775). TEXAS: Brazos Co.: R. G. Reeves 20 (Ms--44661). Jasper Co.: Cory 52728 (Du--362509), 52864 (Du--362508). CULTIVATED: Germany: Herb. F. J. Young s.n. (Ws).

VERBENA CANESCENS H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 221--222, pl. 136. 1817 [not V. canescens Champ., 1860].

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 221--222, pl. 136 (1817), ed. quart., pl. 136 (1817), and ed. quart., 2: 274. 1818; A. Gray, Syn. Fl. N. Am., ed. 1, 2 (1): 336--337 (1878) and ed. 2, 2 (1): 336--337. 1886; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Schubert, Assoc. Trop. Biol. Bull. 4: 88. 1965; J. A. Clark, Gray Herb. Card Ind. issue 245. 1965; Holmgren & Reveal, U. S. Forest Serv. Res. Paper INT-32: [Checklist Vasc. Pl. Intermont. Reg.] 91. 1966; Moldenke, Phytologia 14: 279--280 & 294. 1967.

Additional & emended illustrations: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: pl. 136 [in color] (1817) and ed. quart., 2: pl. 136. 1817.

The Andrew Moldenkes refer to this plant as "prostrate in open alpine field" and as "abundant on road shoulders". Their no. 2340 is said to have had "blue" corollas.

It should be noted here that the H.B.K. reference dates given above have been authenticated by Barnhart (1902).

The Stanford, Lauber, & Taylor 2174a & 2252, previously cited as V. canescens, prove to be var. roemeriana (Scheele) Perry instead, Ravenel s.n. [Rome, 1868] is V. bracteata Lag. & Rodr., and Pringle s.n. [June 14, 1881] is V. plicata Greene.

Additional citations: MEXICO: Coahuila: Edw. Palmer 1047 (Ms--30832). Hidalgo: Moldenke & Moldenke 2333 (Rf). Nuevo León: Mol-

denke & Moldenke 2340 (Ac). Oaxaca: Pringle 4784 (Ms—30778).
Puebla: Moldenke & Moldenke 2318 (Ac).

VERBENA CANESCENS f. ALBIFLORA Moldenke

Additional bibliography: Schubert, Assoc. Trop. Biol. Bull. 4: 88. 1965; J. A. Clark, Grav. Herb. Card Ind. issue 245. 1965; Moldenke, Phytologia 13: 246. 1966.

VERBENA CANESCENS var. ROEMERIANA (Scheele) Perry

Additional bibliography: Moldenke, Phytologia 14: 280 & 294. 1967.

The M. E. Jones 28296, cited below, was erroneously cited by me as V. neomexicana var. hirtella in a previous installment of these notes, and Stanford, Lauber, & Taylor 2174a & 2252 were erroneously cited as typical V. canescens H.B.K.

Stanford, Lauber, & Taylor describe the plant as an herb to 12 inches tall, inhabiting extremely dry areas in old fields. The corollas are described as "blue" on their no. 2174a and as "lavender-blue" on no. 2252. The Andrew Moldenkes refer to the plant as an "abundant roadside weed" in Chihuahua and describe the corollas on their no. 2128 as "blue".

Additional citations: TEXAS: Kinney Co.: C. R. Orcutt 5053 (Du—155012). Val Verde Co.: M. E. Jones 28296 (Du—239763). MEXICO: Chihuahua: Moldenke & Moldenke 2097a (Rf). Durango: Moldenke & Moldenke 2128 (Rf). Nuevo León: Edw. Palmer 1044 (Ms—30779). Tamaulipas: Stanford, Lauber, & Taylor 2174a (Du—366136, N), 2252 (Du—366172, N).

VERBENA CAROLINA L.

Emended synonymy: Verbena biserrata H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 223. 1817. Verbena veronicaefolia H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 223. 1817 [not V. veronicaefolia J. Sm., 1845].

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 222—223 (1817) and ed. quart., 2: 274—275. 1818; N. J. Anderss., Vet. Akad. Handl. Stockh. 1853: 199—200. 1854; N. J. Anderss., Galap. Veg. 81. 1859; B. L. Robinson, Proc. Am. Acad. 38: 196. 1902; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Holmgren & Reveal, U. S. Forest Serv. Res. Paper INT-32: [Checklist Vasc. Pl. Intermont. Reg.] 91. 1966; Moldenke, Phytologia 14: 280 & 297. 1967.

Recent collectors have found this plant growing along streams and on steep slopes with Quercus and Pinus, on dry grazed slopes with Agave, Opuntia, Acacia, and Solanum polyadenium, and at the edge of Pinus-Quercus woods and grazed fields and along rock-brush walls, with Solanum stenophyllum, S. inscendens, and Rubus. Rosas R. calls it "abundant" in Veracruz. The Andrew Moldenkes refer to the plant as "a weed in mowed areas" in Oaxaca, an "abundant roadside weed" in Chiapas, "growing in alpine roadsides" in

Tlaxcala, "on road shoulders" in México, and "a very abundant weed in corn-growing areas" in the Federal District of Mexico. Their no. 2267 has galled inflorescences, while the corollas on their no. 2164 were "white with a violet central ring".

It should be noted that the original publication of this species by Linnaeus in his Syst. Nat., ed. 10, 2: 852 is dated "1860" by Robinson, Proc. Am. Acad. 38: 196 (1902), and that of V. polystachya H.B.K. is dated "1817" by the same author. There is considerable confusion concerning the dates of publication of the N. J. Andersson papers. According to Robinson the Vet. Akad. Handl. Stockh. 1853: 199—200 paper was issued in 1854 and the paper with the same title, "Om Galap. Veg.", was issued later by Andersson with separate pagination and dated "1857", but on page 80 cites a publication issued in 1859, so its date of issue is probably no earlier than 1859. The H.B.K. reference dates given above have been authenticated by Barnhart (1902).

Hooker (1847), Andersson (1854, 1859), and Robinson (1902) record V. carolina from James Island of the Galapagos Islands on the basis of a C. Darwin collection. I have not as yet seen this collection, since all efforts to borrow it from the herbaria where it may be deposited have failed, but thus far all specimens seen by me from the Galapagos and identified as V. carolina have proved to be V. sedula Moldenke.

The corollas are described as "blue" on Breedlove 10856, 11159, & 12324, Hinton 12974, and Rosas R. 94. The H. S. Gentry 6212, distributed as V. carolina, is actually f. albiflora Moldenke, Wiggins & Wiggins 18075 is V. menthaefolia Benth., Edw. Palmer 1040 and Pringle s.n. [July 18, 1884] are V. scabra Vahl, and Curtiss 1959 and Lewton s.n. are Stylosodon carneus (Medic.) Moldenke.

Additional citations: ARIZONA: Santa Cruz Co.: Mason, Drouet, MacEwan, & Price 1808 (Du--5C0472). MEXICO: Chiapas: Breedlove 10856 (Mi), 11159 (Mi), 12324 (Mi); Moldenke & Moldenke 2267 (Rf). Durango: A. R. Moldenke 1563 (Ac). Federal District: G. L. Fisher s.n. [San Angel, July 18, 1924] (Ws); Moldenke & Moldenke 2164 (Ac, Rf). Guanajuato: A. R. Moldenke 1813 (Rf). Hidalgo: R. C. West D.3 (Ac), J.13 (Ac). México: Moldenke & Moldenke 2169 (Ac). Michoacán: Hinton 12974 (Du--345877); A. R. Moldenke 1746 (Ac), 1747 (Ac), 1748 (Rf), 1766 (Rf); Ugent & Flores C. 2168 (Ws). Nayarit: A. R. Moldenke 1642 (Ac). Oaxaca: Moldenke & Moldenke 2302 (Rf), 2306 (Ac); Pringle 4892 (Ms--30808). Puebla: Ugent & Flores C. 2524 (Ws). Tlaxcala: Moldenke & Moldenke 2191b (Rf). Veracruz: Rosas R. 94 (Rf), 253 (Ac). GUATEMALA: Chimaltenango: Molina R. & Molina 12464 (N). HONDURAS: Copán: Molina R. 12892 (N).

VERBENA CAROLINA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 13: 188. 1966.

Additional citations: MEXICO: Hidalgo: R. C. West B.25 (Z).